The opinion in support of the decision being entered today was **not** written for publication and is **not** binding precedent of the Board.

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

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*Ex parte* PANKAJ VINUBHAI SHAH

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Appeal No. 2004-2219
Application No. 09/927,009

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ON BRIEF

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Before KIMLIN, TIMM, and DELMENDO, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

***DECISION ON APPEAL***

This appeal involves claims 1-4, which are all of the claims pending in this application. We have jurisdiction over the appeal pursuant to 35 U.S.C. § 134.

## *INTRODUCTION*

The claims are directed to a method for forming a moisture reactive hot melt adhesive and the adhesive formed thereby. Claim 1 is illustrative of the method:

1. A method for forming a moisture reactive hot melt adhesive comprising

a) forming a hydroxyl-functional prepolymer by reacting first components comprising a polyol selected from the group consisting of polyether polyols, polyester polyols, and mixtures thereof, said polyol having a weight average molecular weight of from 250 to 5,000; and a polyisocyanate, the ratio of OH/NCO groups of said first components on an equivalents basis being from 1.05 to 3.0;

b) admixing second components comprising said hydroxyl-functional prepolymer, a polyol selected from the group consisting of polyether polyols, polyester polyols, and mixtures thereof, and a polyisocyanate, the weight ratio of said hydroxyl-functional prepolymer to said polyol being from 9/1 to 1/9, and the ratio of NCO/OH groups of said second components on an equivalents basis being from 1.5 to 2.2; and

c) reacting, or allowing to react, said admixture.

The Examiner maintains rejections under 35 U.S.C. §§ 102(e) and 103(a). As evidence of unpatentability, the Examiner relies upon the following prior art references:

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| Anderson et al. (Anderson) | 5,939,499 | Apr. 17, 1999 |
| Graham | 6,365,700 | Apr. 2, 2002 |

Claims 1-3 stand rejected under 35 U.S.C. § 102(e) as anticipated by Graham. Claims 1-3 also stand rejected under 35 U.S.C. § 103(a) as obvious over Graham. Claim 4 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Graham in view of Anderson.

We reverse with regard to the rejection under 35 U.S.C. § 102, but we affirm with regard to the rejections under 35 U.S.C. § 103. Our reasons follow.

***OPINION***

Appellant indicates that the claims stand or fall together and focuses his arguments on claim 1. Our main focus, therefore, will be on claim 1, the sole independent claim.

With regard to the rejection under 35 U.S.C. § 102(e), we agree with Appellant that Graham does not describe the method of claim 1 with a degree of specificity sufficient to render the claim anticipated. Rather, some picking and choosing from various unrelated disclosures within the reference would be necessary to meet the requirements of the claim. Such picking and choosing points to obviousness rather than anticipation. *See In re Arkley*, 455 F.2d 586, 587, 172 USPQ 524, 526 (CCPA 1972). We, therefore, find that the Examiner failed to establish a case of anticipation.

That being said, we agree with the Examiner's conclusion of obviousness. The Examiner establishes that Graham describes a method of forming a moisture reactive hot melt adhesive by a two step approach involving first forming a prepolymer and then further reacting to obtain the adhesive product as claimed (Answer, p. 4). As further established by the Examiner, the sole difference between the method of Graham and the method of claim 1 is in the ranges of molecular weight and concentration taught by Graham as compared to the ranges of the claim (Answer, pp. 4-5). As established by the Examiner, the ranges of Graham overlap, or translate to an overlap, with the ranges and ratios of the claim (Answer, pp. 4-5 and pp. 6-8). It is well settled that a *prima facie* case of obviousness typically exists when the ranges specified in a claim overlap the ranges disclosed in the prior art. *E.g., In re Peterson*, 315 F.3d 1325, 1329, 65

USPQ2d 1379, 1382 (Fed. Cir. 2003)*; In re Geisler*, 116 F.3d 1465, 1469, 43 USPQ2d 1362, 1365 (Fed. Cir. 1997); *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (CCPA 1976); *In re Malagari*, 499 F.2d 1297, 1303, 182 USPQ 549, 553 (CCPA 1974). In these cases, the burden shifts to the applicant to show that a particular range or combination of ranges is critical, generally by showing that the claimed range or combination of ranges achieves unexpected results relative to the prior art ranges. *In re Woodruff*, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936-37 (Fed. Cir. 1990).

Appellant argues that the Examiner has failed to point out any teaching or suggestion within Graham to modify Graham's method or composition to that of Appellant (Brief, p. 6). On the contrary, the teaching in Graham of ranges which, with the necessary conversions, overlap with the ranges of claim 1 in a method otherwise the same as that claimed provides the required "suggestion" to do what Appellant has claimed. *See In re Boesch*, 617 F.2d 272, 276, 205 USPQ 215, 219 (CCPA1980)("[D]iscovery of an optimum value of a result effective variable in a known process is ordinarily within the skill of the art." (citations omitted)).

Appellant also argues that the Examiner concedes that Graham does not disclose admixing second components including the prepolymer, polyol, and polyisocyanate, the weight ratio of the prepolymer to the polyol being from 9/1 to 1/9 (Brief, pp. 6-7). We find no such concession in either the Final Rejection or the Answer. In fact, the Examiner found that Graham teaches admixing the prepolymer and polyol in concentrations which, when translated into weight ratios, would overlap with the claimed ratios (Answer, pp. 2-3). The Examiner's finding

is supported by the disclosure in Graham (Graham, col. 3, ll. 45-46 and 61-62). Appellant fails to convince us of any error in this finding. The disclosure of concentrations which result in ratios overlapping those of the claim supports a *prima facie* case of obviousness.

There is a further dispute over what Graham teaches with regard to the molecular weight of the polyol used to form the prepolymer. The Examiner finds that Graham teaches using a polyester polyol with a molecular weight in the range of 2,000-15,000 (Answer, p. 2). This range overlaps the claimed range of 250-5,000. Appellant acknowledges that Graham discloses using polyols of molecular weight in the range of 2,000-15,000, but quotes a passage in Graham which, according to Appellant, points out the inapplicability of the polyols of molecular weight of 3600 (Brief, p. 7). Appellant argues that Graham fails to provide enablement for molecular weights such as 3600 and thereby teaches away from the lower molecular weights claimed by Appellant (Brief, p. 7).

Appellant's conclusion of non-enablement and teaching away is not supported by Graham. Appellant quotes Graham as stating: "if a lower molecular weight hydroxyl terminated polyester is used, i.e., one with a molecular weight of 3600 ... the viscosity of the resulting prepolymer is too high for efficient mixing ..." (Brief, p. 7). Appellant conveniently leaves out a key phrase, i.e., "in a similar NCO:OH ratio," in the portion of Graham he quotes and does not consider the quoted information in the context of the full paragraph. What Graham states is:

> The polyester is reacted with a poly or diisocyanate to produce an hydroxy terminated prepolymer. This step is called the first stage. If the molecular weight of the polyester is too high, mixing can be difficult and the efficiency of the mixing at the diisocyanate addition phase becomes critical. It has been found, that

> if the polyester and the diisocyanate are reacted in an ***NCO:OH ratio of 0.7:1.0 to 1:0.7***, a high molecular weight prepolymer which is stirrable above 120 °C and sufficiently stable prior to the addition of second stage polyols in the reaction can be formed. By contrast, if a lower molecular weight hydroxyl terminated polyester is used, i.e., one with a molecular weight of 3600, such as DYNACOLL 7360, ***in a similar NCO:OH ratio***, the viscosity of the resulting prepolymer is too high for efficient mixing because of the higher concentration of urethane groups.

(emphasis added).

The point being made by Graham is that a different NCO:OH ratio is required when a hexane diol/adipatic acid polyester (polyester polyol) of a molecular weight such as 3600 is used. Graham does not state that polyester polyols with molecular weights such as 3600 are inoperable. Nor can we agree that Graham does not enable the use of, or that the reference teaches away from, polyester polyols having the lower molecular weights in the disclosed range of 2,000-15,000 range. We agree with the Examiner that Graham discloses using polyester polyols of molecular weights overlapping the claimed range. We further point out that even if Graham did teach away from using polyols of molecular weights of 3600 and below, there would still be an overlap with the claimed range at 3,601-5,000.

Here, Graham is teaching the formation of hot melt adhesives as claimed using process steps as claimed and with ingredients which overlap in type and concentration. The Examiner has established a *prima facie* case of obviousness based upon the overlapping ranges and the burden has shifted to the Appellant to show that the particular range is critical. *See Woodruff*, 919 F.2d at 1578, 16 USPQ2d at 1936-37. Appellant presents no evidence of criticality in this appeal.

We conclude that the Examiner has established a *prima facie* case of obviousness with respect to the subject matter of claims 1-3 which has not been sufficiently rebutted by Appellant.

Turning to the rejection of claim 4 under 35 U.S.C. § 103(a) over Graham in view of Anderson, we note that Appellant's arguments focus on the limitations of claim 1 and what Graham teaches with respect to those limitations.[1] For the reasons expressed above, we conclude that the Examiner has established a *prima facie* case of obviousness with respect to the subject matter of claim 4.

## ***CONCLUSION***

To summarize, the decision of the Examiner to reject claims 1-4 under 35 U.S.C. § 103(a) is affirmed, but the decision of the Examiner to reject claims 1-3 under 35 U.S.C. § 102(e) is reversed.

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[1]Appellant also discusses the limitations of claim 2, however, claim 4 is dependent on either claim 1 or claim 2 in the alternative. We select claim 4 as dependent from claim 1 to address the issues on appeal. We, therefore, need not address the arguments directed to the limitations of claim 2.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 CFR § 1.136(a).

AFFIRMED

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| EDWARD C. KIMLIN<br>Administrative Patent Judge | ) |
| CATHERINE TIMM<br>Administrative Patent Judge | ) BOARD OF PATENT<br>) APPEALS<br>) AND<br>) INTERFERENCES |
| ROMULO H. DELMENDO<br>Administrative Patent Judge | ) |

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